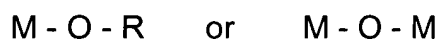


## **AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A process for the polymerisation of olefin monomers, comprising polymerising an olefin monomer selected from the group consisting of (a) ethylene, (b) propylene, (c) mixtures of ethylene and propylene, and (d) mixtures of (a), (b), or (c) with one or more other alpha-olefins in a polymerisation reactor in the presence of ~~an activated~~ a catalyst system including (a) a polymerisation catalyst ~~and~~, (b) an ionic activator having a cation and an anion, wherein the anion has at least one substituent comprising a moiety having an active hydrogen, and (c) wherein an organometallic compound of a Group IIIB metal having at least one unit of formula:



where M is the Group IIIB metal and R is a hydrocarbyl group, wherein an activated catalyst component including the polymerisation catalyst (a) and the ionic activator (b) is first prepared and then the organometallic compound (c) is premixed with said activated catalyst component as a separate component before the resulting mixture is added to the reactor as in the presence of the activated catalyst system.

2. (Previously presented) The process according to claim 1, wherein the Group IIIB metal is aluminium or boron.

3. (Previously presented) The process according to claim 1 or 2, wherein the organometallic compound is an aluminoxane.

4. (Previously presented) The process according to claim 3, wherein the aluminoxane is tetraisobutylaluminoxane.

5. (Previously presented) The process according to claim 1, wherein the organometallic compound is a metal alkoxide.

6. (Previously presented) The process according to claim 5, wherein the metal alkoxide is diethylaluminium ethoxide.

7. (Previously presented) The process according to claim 1, wherein the molar ratio of the organometallic compound to a metal content of the polymerisation catalyst is in the range of from 0.1:1 to 1000:1.

8. (Previously presented) The process according to claim 7, wherein the molar ratio of the organometallic compound to the metal content of the polymerisation catalyst is in the range of from 1:1 to 100:1.

9-10. (Cancelled)

11. (Previously presented) The process according to claim 1, wherein the polymerisation catalyst is a metallocene.

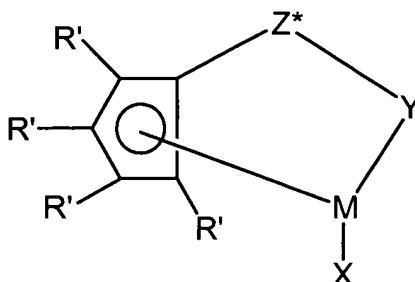
12. (Previously presented) The process according to claim 11, wherein the metallocene has the formula:



wherein Cp is a single cyclopentadienyl or substituted cyclopentadienyl group optionally covalently bonded to M through a substituent, M is a Group VIA metal bound in a  $\eta^5$  bonding mode to the cyclopentadienyl or substituted cyclopentadienyl group, X each occurrence is hydride or a moiety selected from the group consisting of halo, alkyl, aryl, aryloxy, alkoxy, alkoxyalkyl, amidoalkyl, and siloxyalkyl having up to 20 non-hydrogen atoms and neutral Lewis base ligands having up to 20 non-hydrogen atoms or optionally

one X together with Cp forms a metallocycle with M and n is dependent upon the valency of the metal.

13. (Previously presented) The process according to claim 11, wherein the metallocene is represented by the general formula:



wherein:

R' each occurrence is independently selected from the group consisting of hydrogen, hydrocarbyl, silyl, germyl, halo, cyano, and combinations thereof, said R' having up to 20 non-hydrogen atoms, and optionally, two R' groups (where R' is not hydrogen, halo or cyano) together form a divalent derivative thereof connected to adjacent positions of the cyclopentadienyl ring to form a fused ring structure;

X is a neutral  $\eta^4$  bonded diene group having up to 30 non-hydrogen atoms, which forms a  $\pi$ -complex with M;

Y is -O-, -S-, -NR\*-, -PR\*-;

M is titanium or zirconium in the + 2 formal oxidation state;

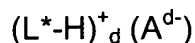
Z\* is SiR\*<sub>2</sub>, CR\*<sub>2</sub>, SiR\*<sub>2</sub>SIR\*<sub>2</sub>, CR\*<sub>2</sub>CR\*<sub>2</sub>, CR\*=CR\*, CR\*<sub>2</sub>SIR\*<sub>2</sub>, or

GeR\*<sub>2</sub>, wherein:

R\* each occurrence is independently hydrogen, or a member selected from the group consisting of hydrocarbyl, silyl, halogenated alkyl, halogenated aryl, and combinations thereof, said

R\* having up to 10 non-hydrogen atoms, and optionally, two R\* groups from Z\* (when R\* is not hydrogen), or a R\* group from Z\* and [[an]] a R\* group from Y form a ring system.

14. (Previously presented) The process according to claim 1, wherein the ionic activator has the general formula:



wherein

L\* is a neutral Lewis base,

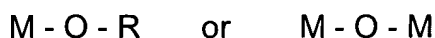
$(L^*-H)^+_d$  is a Bronsted acid,

$A^{d-}$  is a non-coordinating compatible anion having a charge of  $d^-$ , and

d is an integer from 1 to 3.

15. (Cancelled)

16. (New) A process for the polymerisation of olefin monomers, comprising polymerising an olefin monomer selected from the group consisting of (a) ethylene, (b) propylene, (c) mixtures of ethylene and propylene, and (d) mixtures of (a), (b), or (c) with one or more other alpha-olefins in a polymerisation reactor in the presence of a catalyst system including (a) a polymerisation catalyst, (b) an ionic activator having a cation and an anion, where the anion has at least one substituent comprising a moiety having an active hydrogen, and c) an organometallic compound of a Group IIIB metal having at least one unit of formula:



where M is the Group IIIB metal and R is a hydrocarbyl group, wherein the polymerization catalyst (a) and the ionic activator (b) are added to the reactor as an

activated catalyst component, the organometallic compound (c) being added as a separate component to the reactor in the presence of the activated catalyst component.

17. (New) The process according to claim 16, wherein the Group IIIB metal is aluminium or boron.

18. (New) The process according to claim 16 or 17, wherein the organometallic compound is an aluminoxane.

19. (New) The process according to claim 18, wherein the aluminoxane is tetraisobutylaluminoxane.

20. (New) The process according to claim 16, wherein the organometallic compound is a metal alkoxide.

21. (New) The process according to claim 20, wherein the metal alkoxide is diethylaluminium ethoxide.

22. (New) The process according to claim 16, wherein the molar ratio of the organometallic compound to a metal content of the polymerisation catalyst is in the range of from 0.1:1 to 1000:1.

23. (New) The process according to claim 22, wherein the molar ratio of the organometallic compound to the metal content of the polymerisation catalyst is in the range of from 1:1 to 100:1.

24. (New) The process according to claim 16, wherein the organometallic compound is added continuously to the reactor.

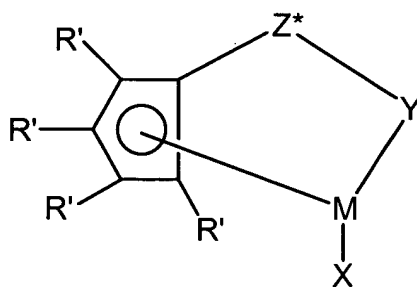
25. (New) The process according to claim 16, wherein the polymerisation catalyst is a metallocene.

26. (New) The process according to claim 25, wherein the metallocene has the formula:



wherein Cp is a single cyclopentadienyl or substituted cyclopentadienyl group optionally covalently bonded to M through a substituent, M is a Group VIA metal bound in a  $\eta^5$  bonding mode to the cyclopentadienyl or substituted cyclopentadienyl group, X each occurrence is hydride or a moiety selected from the group consisting of halo, alkyl, aryl, aryloxy, alkoxy, alkoxyalkyl, amidoalkyl, and siloxyalkyl having up to 20 non-hydrogen atoms and neutral Lewis base ligands having up to 20 non-hydrogen atoms or optionally one X together with Cp forms a metallocycle with M and n is dependent upon the valency of the metal.

27. (New) The process according to claim 25, wherein the metallocene is represented by the general formula:



wherein:

R' each occurrence is independently selected from the group consisting of hydrogen, hydrocarbyl, silyl, germyl, halo, cyano, and combinations thereof, said R' having up to 20 non-hydrogen atoms, and optionally, two R' groups (where R' is not hydrogen, halo or cyano) together form a divalent derivative thereof connected to adjacent positions of the cyclopentadienyl ring to form a fused ring structure;

X is a neutral  $\eta^4$  bonded diene group having up to 30 non-hydrogen atoms, which forms a  $\pi$ -complex with M;

Y is -O-, -S-, -NR<sup>\*</sup>-, -PR<sup>\*</sup>-,

M is titanium or zirconium in the + 2 formal oxidation state;

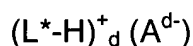
Z<sup>\*</sup> is SiR<sup>\*</sup><sub>2</sub>, CR<sup>\*</sup><sub>2</sub>, SiR<sup>\*</sup><sub>2</sub>SIR<sup>\*</sup><sub>2</sub>, CR<sup>\*</sup><sub>2</sub>CR<sup>\*</sup><sub>2</sub>, CR<sup>\*</sup>=CR<sup>\*</sup>, CR<sup>\*</sup><sub>2</sub>SIR<sup>\*</sup><sub>2</sub>, or

GeR<sup>\*</sup><sub>2</sub>, wherein:

R<sup>\*</sup> each occurrence is independently hydrogen, or a member selected from the group consisting of hydrocarbyl, silyl, halogenated alkyl, halogenated aryl, and combinations thereof, said

R<sup>\*</sup> having up to 10 non-hydrogen atoms, and optionally, two R<sup>\*</sup> groups from Z<sup>\*</sup> (when R<sup>\*</sup> is not hydrogen), or a R<sup>\*</sup> group from Z<sup>\*</sup> and a R<sup>\*</sup> group from Y form a ring system.

28. (New) The process according to claim 16, wherein the ionic activator has the general formula:



wherein

L<sup>\*</sup> is a neutral Lewis base,

(L<sup>\*</sup>-H)<sup>+</sup><sub>d</sub> is a Bronsted acid,

A<sup>d-</sup> is a non-coordinating compatible anion having a charge of d<sup>-</sup>, and

d is an integer from 1 to 3.